

The Adverse Childhood Experiences Study

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The Adverse Childhood Experiences (ACE) Study

The largest study of its kind ever done to examine the

health and social effects of adverse childhood experiences

throughout the lifespan (17,421 participants)

What do we mean by Adverse Childhood Experiences?

Experiences that represent health or social problems of national importance.

- childhood abuse and neglect**
- growing up with domestic violence, substance abuse or mental illness in the home, parental discord, crime**



ACE Study Design

**Survey Wave I--71% response
(9,508/13,494)**

Death Index

Follow-up

Discharge

(N = 17,421)

**Mortality
National**

**Morbidity
Hospital**

Outpatient

Visits

**Survey Wave II--65% response
Emergency room visits (8,667/13,330)**

Pharmacy Utilization

All medical evaluations



ACE Study Procedure

- 1. Patient makes appointment for complete physical**
- 2. Patient is mailed HEALTH APPRAISAL QUESTIONNAIRE (HAQ) to complete prior to visit.**
- 3. Patient goes to physical, turns in HAQ.**
- 4. Patient is mailed copy of FAMILY HEALTH HISTORY (FHH).**



Death



**Early
Death**

**Disease, Disability
and Social Problems**

**Adoption of
Health-risk Behaviors**

**Social, Emotional, &
Cognitive Impairment**

Adverse Childhood Experiences

Conception



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Characteristics of the Study Population

Mean age (years)	56.9 (\pm 15.3)
Range	19.0-97.6

Women	54%
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Education

No H.S. diploma	7%
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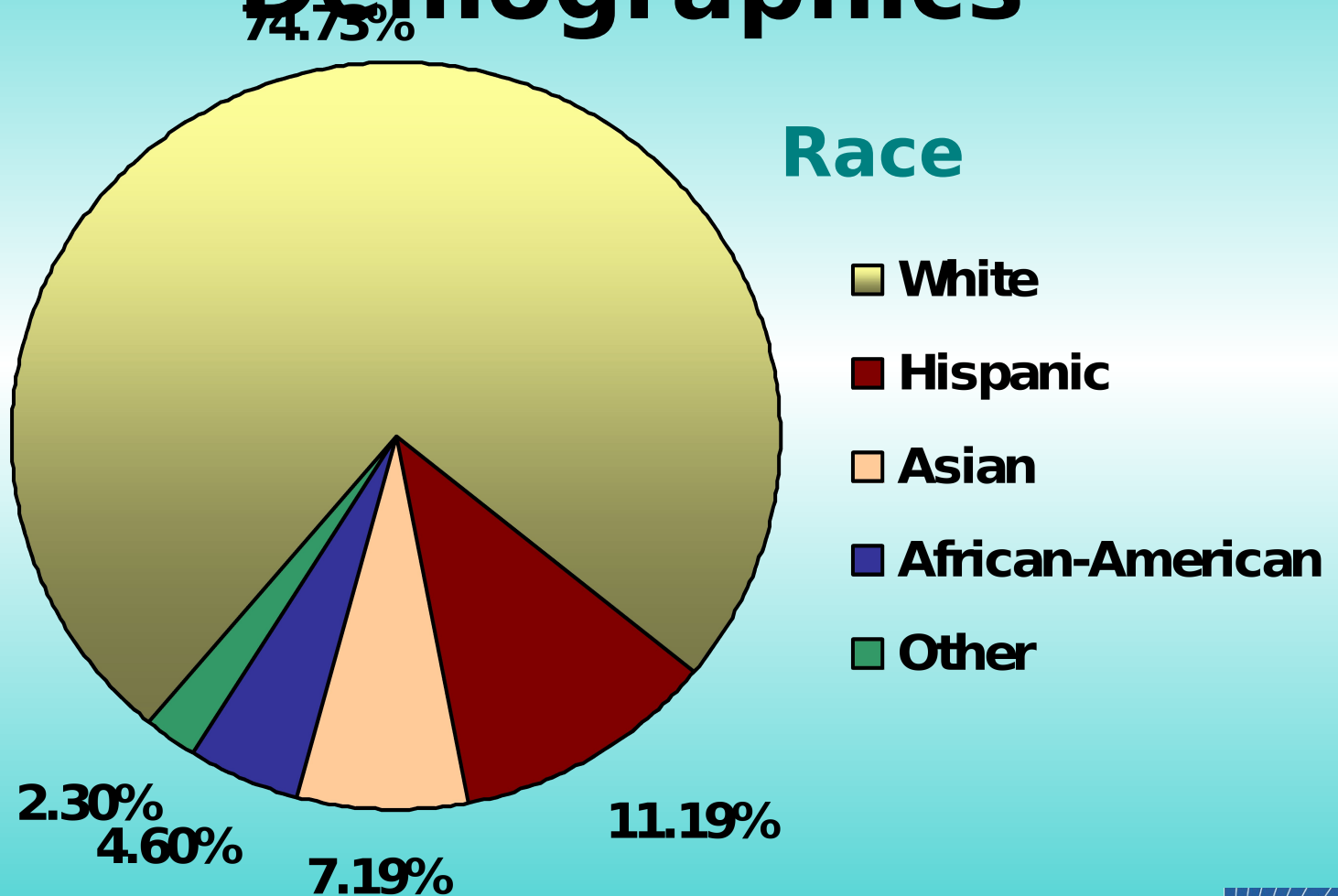
H.S. diploma or GED	17%
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Some college	35%
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College graduate	39%
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ACE Study Demographics



Test-Retest Reliability of Retrospective Reports of Adverse Childhood Experiences

Retrospective reports of ACEs:

- **Recall trouble due to time lapse between childhood and adulthood**
- **Variability of response may occur due to sensitivity and nature of questions.**
- **Early trauma and stress may impact memory**



Definition of Adverse Childhood Experiences

Abuse By Parents During Childhood

Emotional

$k = .66 (.53)$

Often or very often swore at, insulted, or put me down...?

Often or very often act in a way that made you afraid that you might

be physically hurt?

Physical

$k = .55 (.47)$

Sometimes, Often or very often pushed, grabbed, shoved
slapped me...

Sometimes, often, or very often hit me so hard that I had
marks or were injured

Sexual

$k = .69$

(.61 Did an adult or person at least 5 years older ever...):

Touch or fondle you in a sexual way?

Have you touch their body in a sexual way?

Attempt oral, anal, or vaginal intercourse with you?

Actually have oral, anal or vaginal intercourse with you?

Dube et al., 2004, Child Abuse & Neglect.



Definition of Adverse Childhood Experiences

Family Exposures:

Substance Abuse

k = .75 (.68 -

Live with anyone who was a problem drinker or alcoholic?

Live with anyone who used street drugs?

Mental Illness

k = .51 (.42 -

Was a household member depressed or mentally ill?

Did a household member attempt suicide?

Mother Treated Violently

k = .77 (.68 -

Was your mother (or stepmother):

Sometimes, often, or very often pushed, grabbed, slapped or had something thrown at her?

Sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard ?

Ever repeatedly hit over at least a few minutes?

Ever threatened with, or hurt by, a knife or gun?

Criminal Behavior in Household

k = .46 (.27 - .

Did a household member go to prison?



Prevalence of Individual Adverse Childhood Experiences

Childhood Abuse:

Physical 28.3%

Sexual 20.7%

Emotional
10.5%

*Childhood Neglect:**

Emotional
15.0%

Physical 10.0%

Household Exposures

Substance abuse
26.9%

Parental separation
or divorce

23.5%

* Wave 2 Only

Mental illness

17.3%

Battered mother

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Adverse Childhood Experiences (ACE) Sc

Number of individual adverse childhood experiences were summed.....

<i>ACE score</i>	<i>Prevalence</i>
0	36.4%
1	26.2%
2	15.8%
3	9.5%
4	6.0%
5	3.5%
6	1.6%
7 or more	0.9%

64% reported experiencing one or more
37% reported experiencing two or more



Co-occurrence of parental alcohol abuse Adverse Childhood Experiences (ACEs)



Prevalence of Parental Alcohol Abuse

<i>Parental alcohol abuse:</i>	Percent
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Neither parent	78
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At least one parent	22
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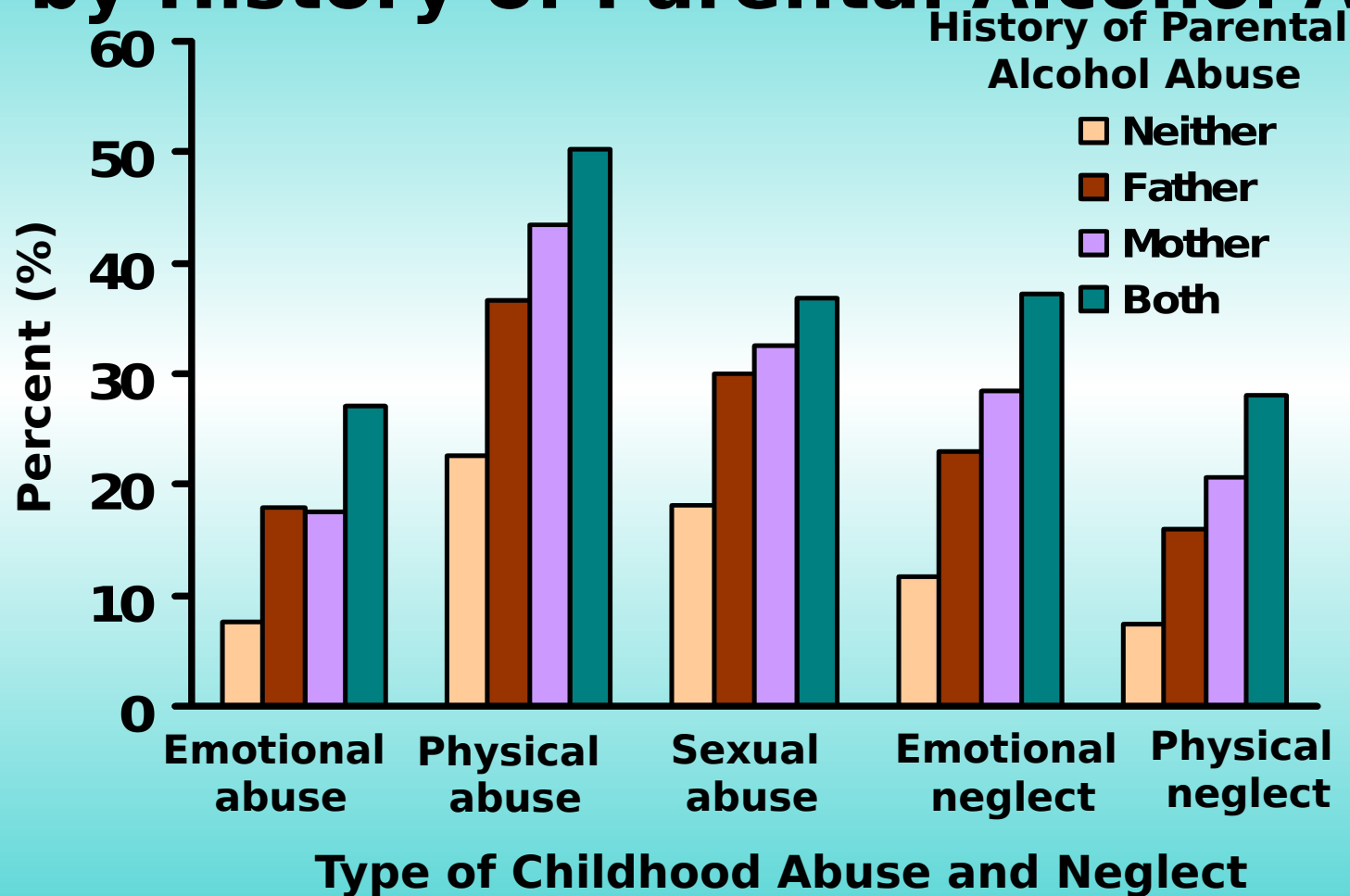
Father	17
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Mother	2
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Both	3
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Dube et al., 2001, Child Abuse & Neglect.

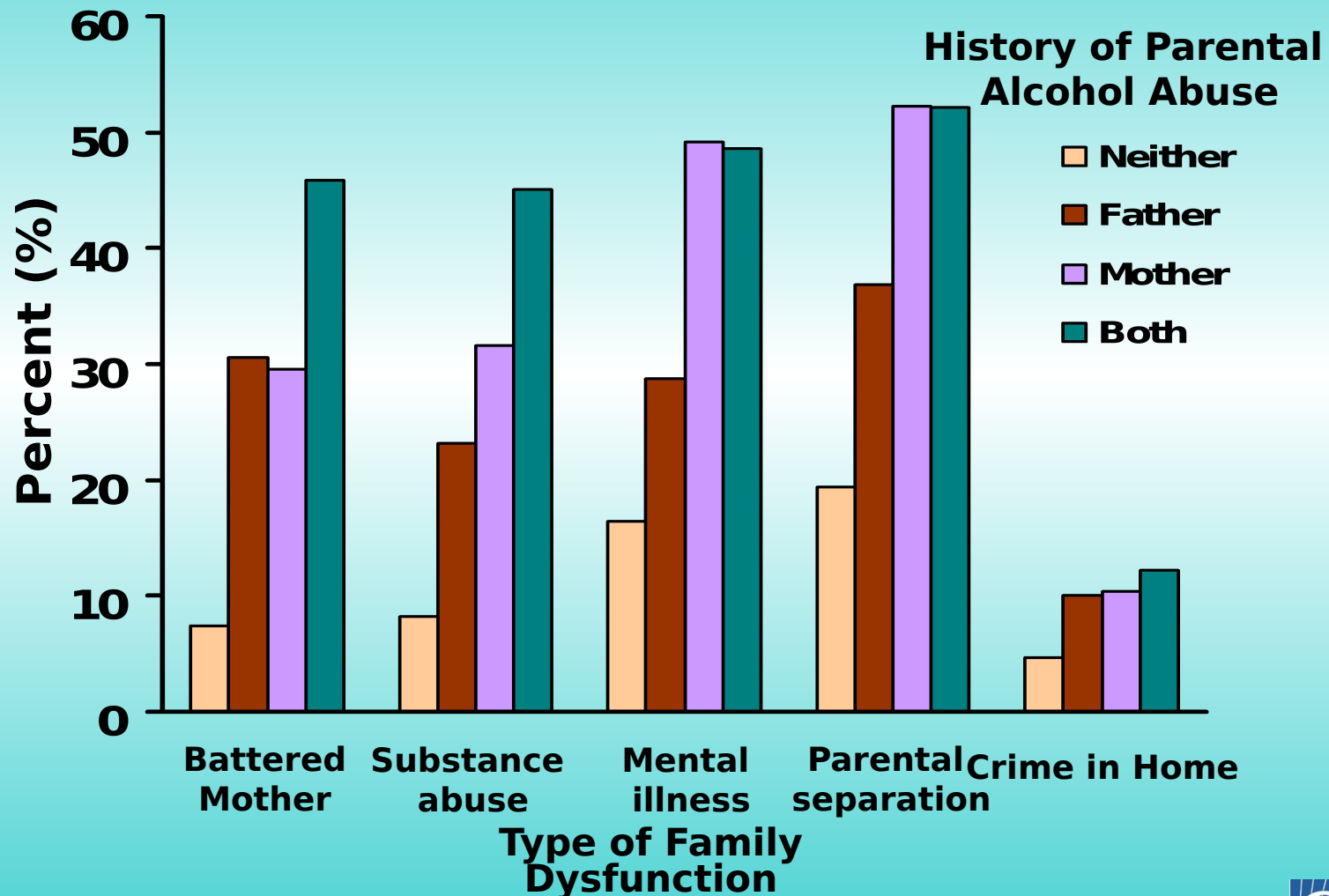
Prevalence of Childhood Abuse and Neglect by History of Parental Alcohol Abuse



Dube et al., 2001, *Child Abuse & Neglect*.

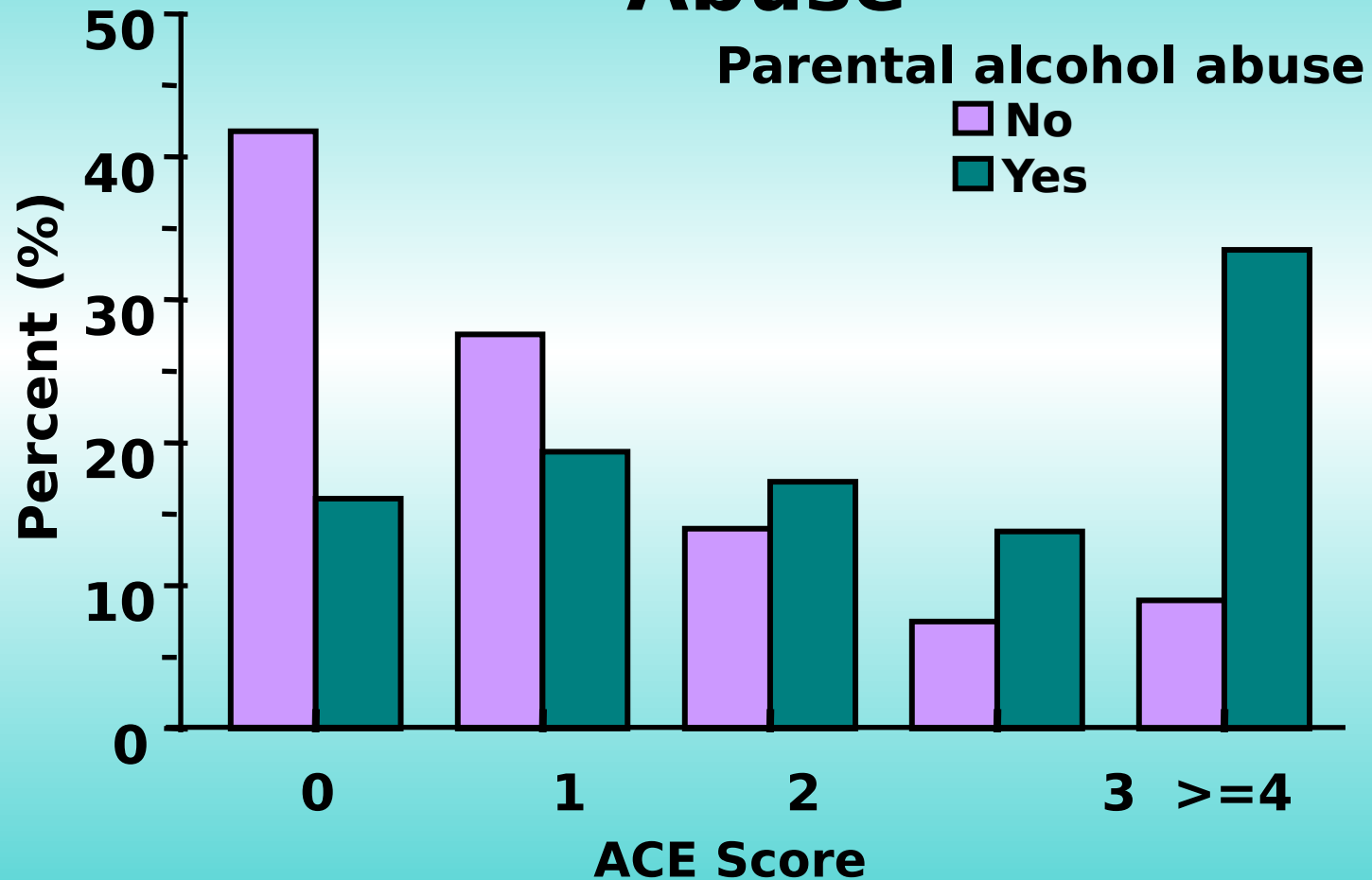
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Prevalence of Family Dysfunction by History of Parental Alcohol Abuse



Dube et al., 2001, *Child Abuse & Neglect*.

Distribution of ACE Score by a History of Parental Alcohol Abuse



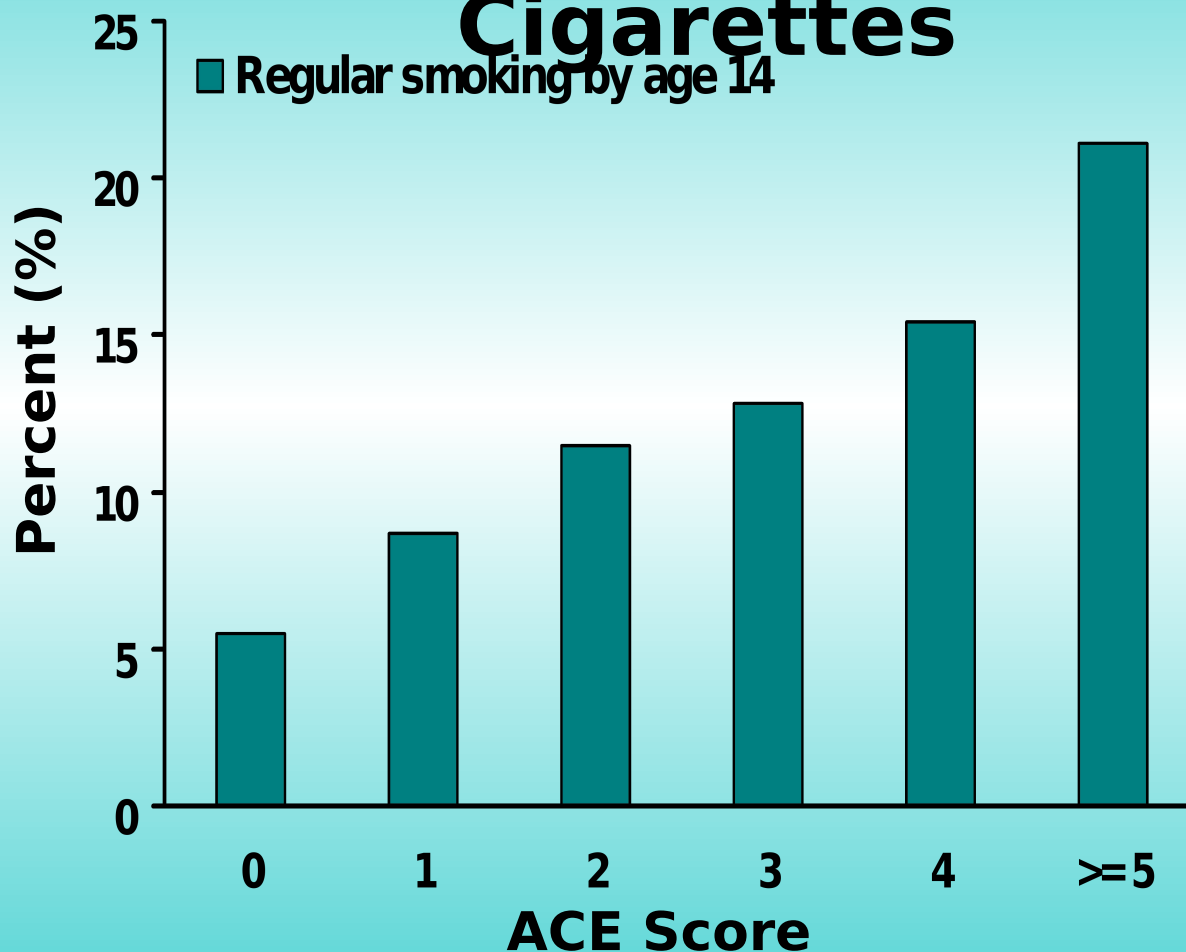
Dube et al., 2001, Child Abuse & Neglect.

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Adverse Childhood Experiences Increase the Likelihood of Substance Use and Attempted Suicide in Adolescence



Relationship Between ACE Score and Early Initiation of Smoking Cigarettes



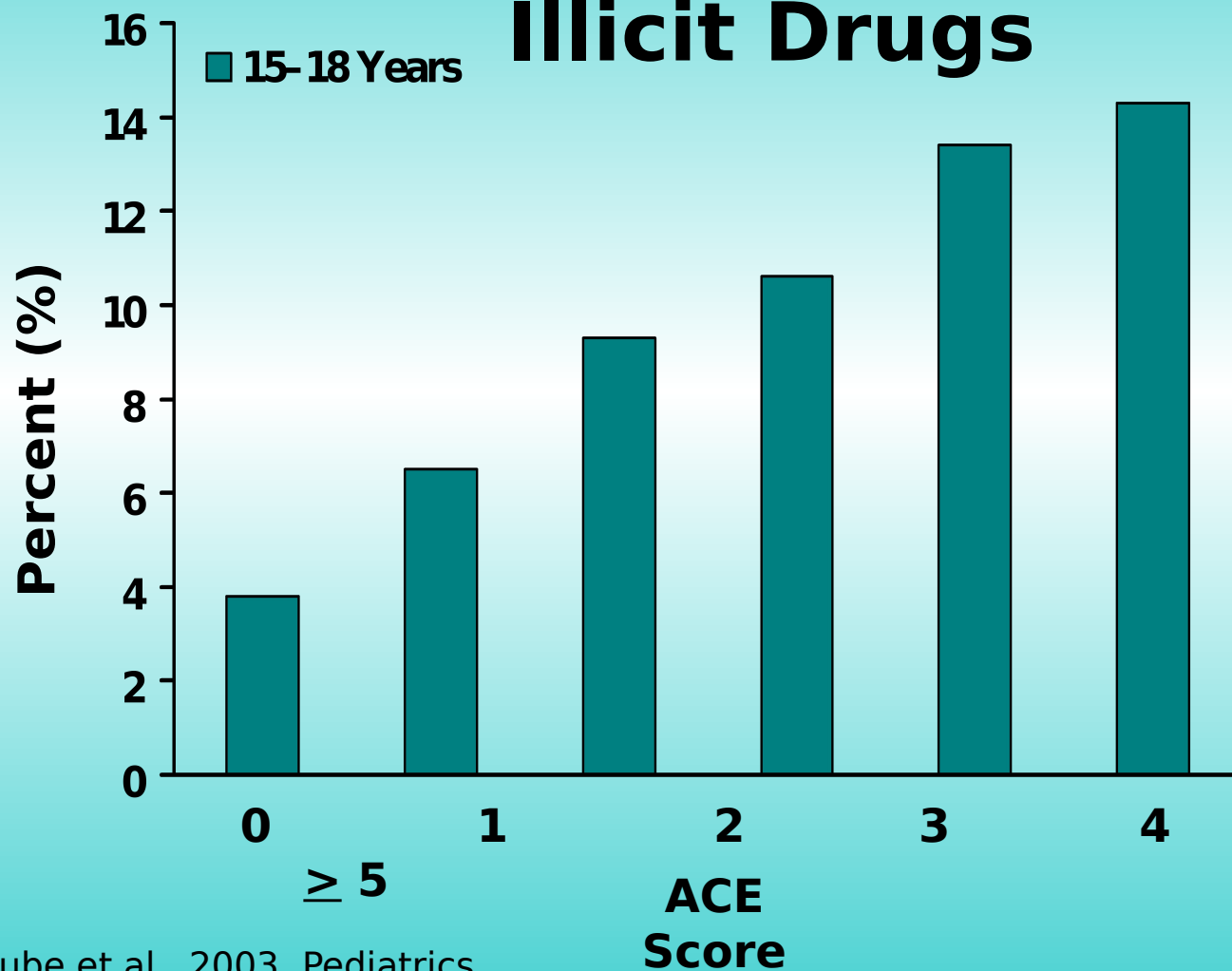
Anda et al., 1999, [JAMA](#)



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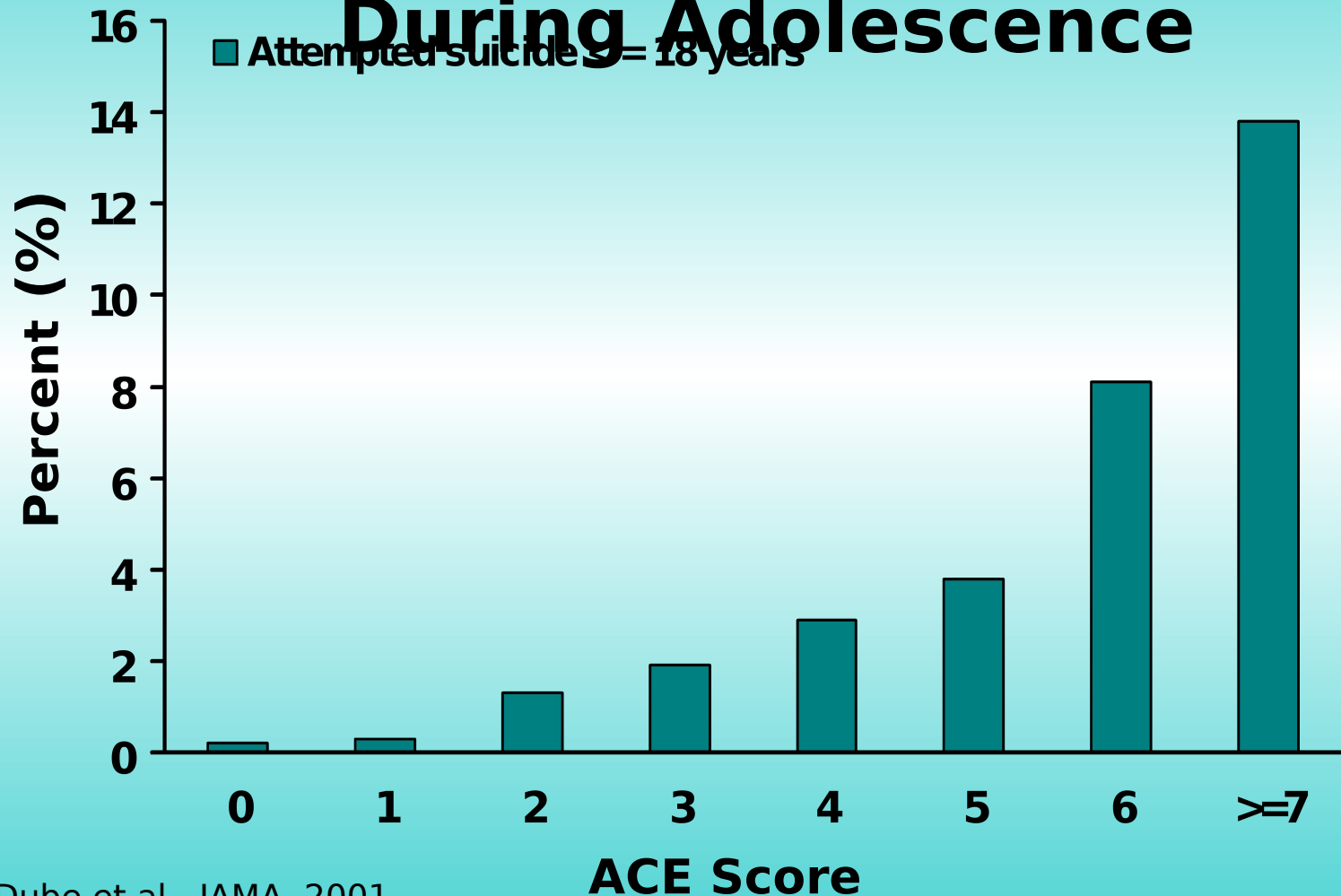
Relationship Between Number of ACEs and the Age at Initiation of Illicit Drugs



Dube et al., 2003, Pediatrics

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Relationship Between the ACE Score and Attempting Suicide During Adolescence



Dube et al., JAMA, 2001

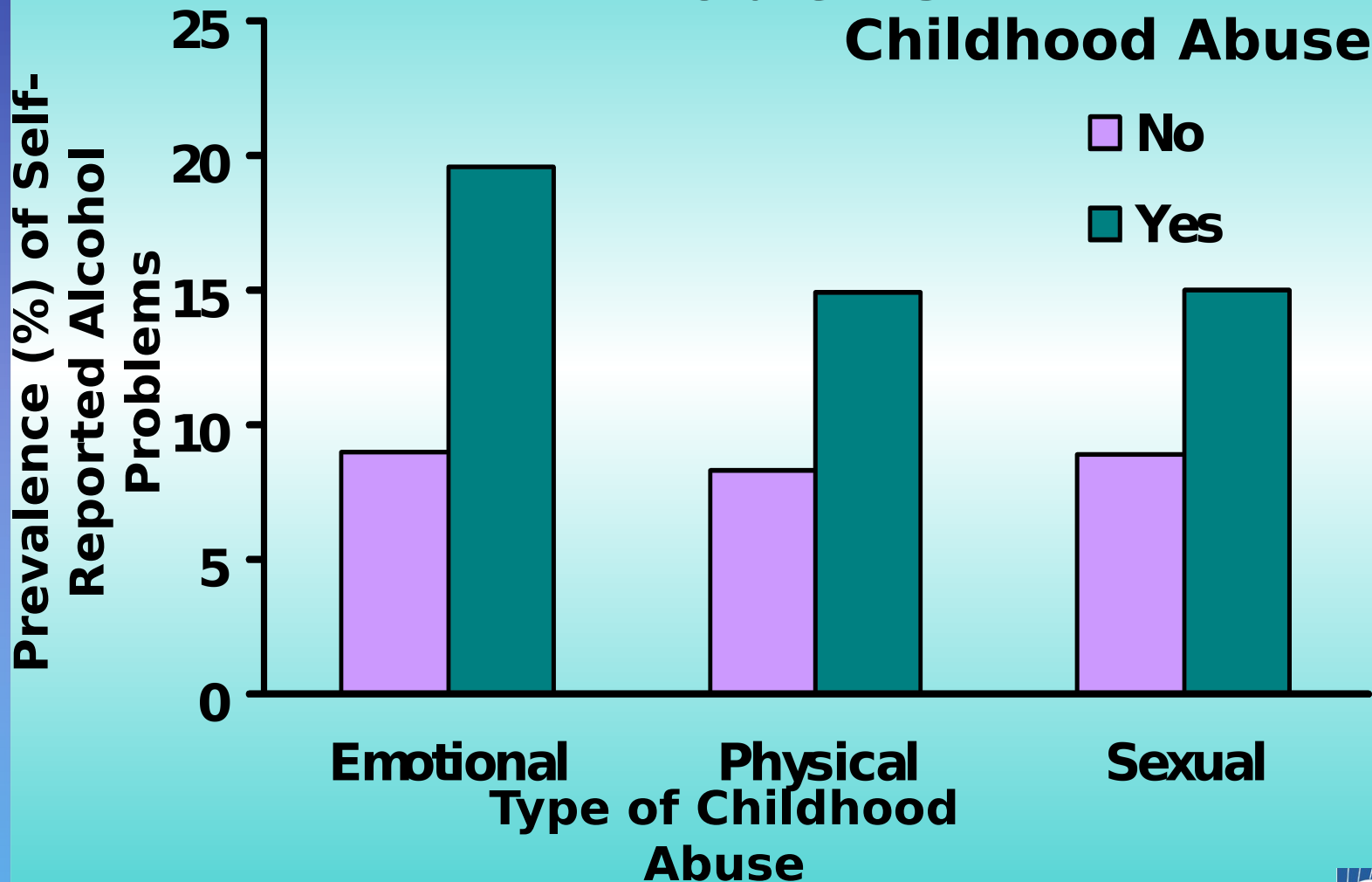


Adverse Childhood Experiences and Prevalence of Adult Alcohol Problems

- **Self-Reported Alcohol Problems
10%**
- **Self-Reported Alcoholism
6%**
- **Ever Married an Alcoholic
18%**

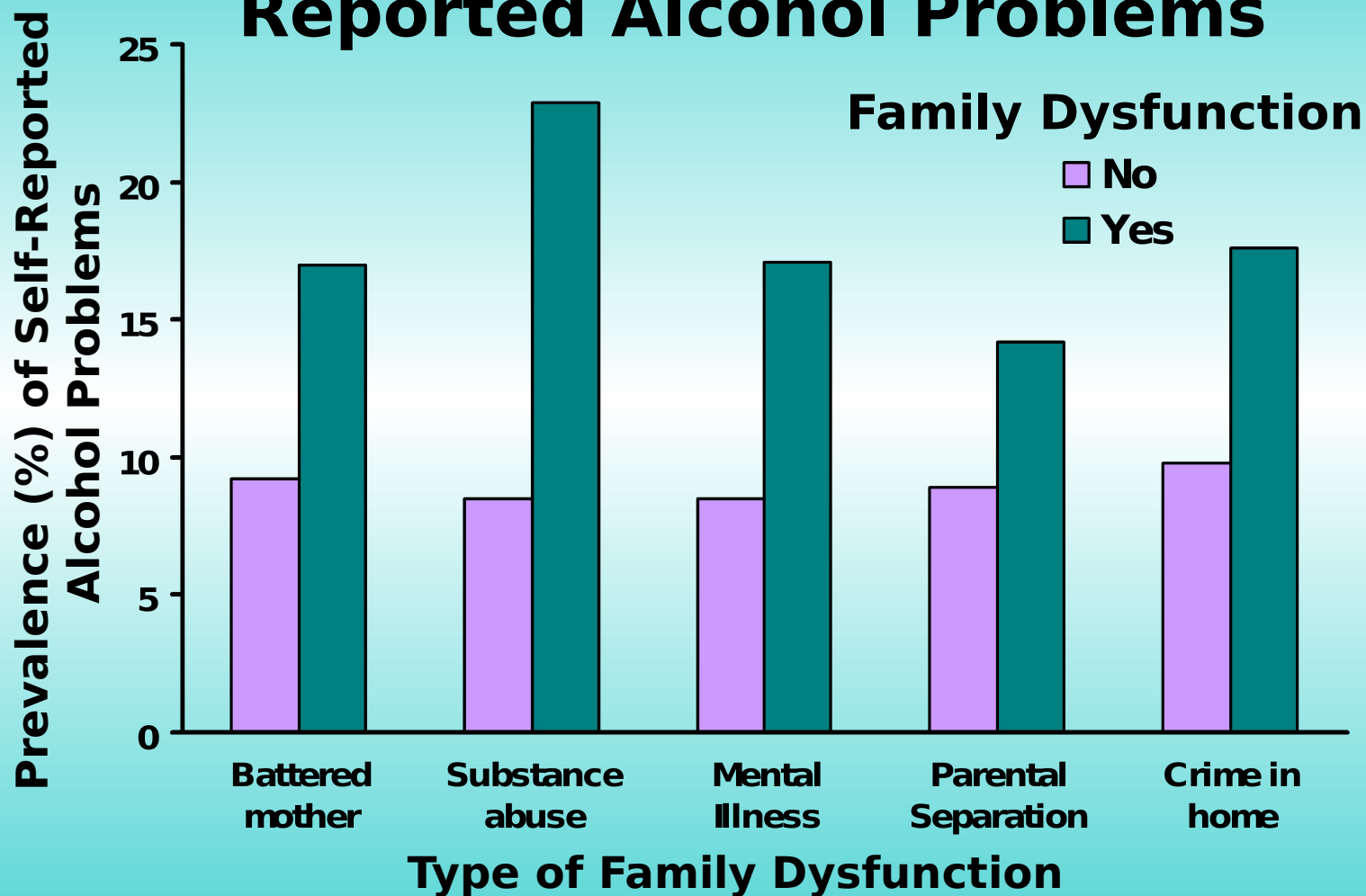
Dube et al., 2002, Addictive
Behaviors.

Childhood Exposure to Abuse and Prevalence of Self-Reported Alcohol Problems



Dube et al., 2002, Addictive Behaviors.

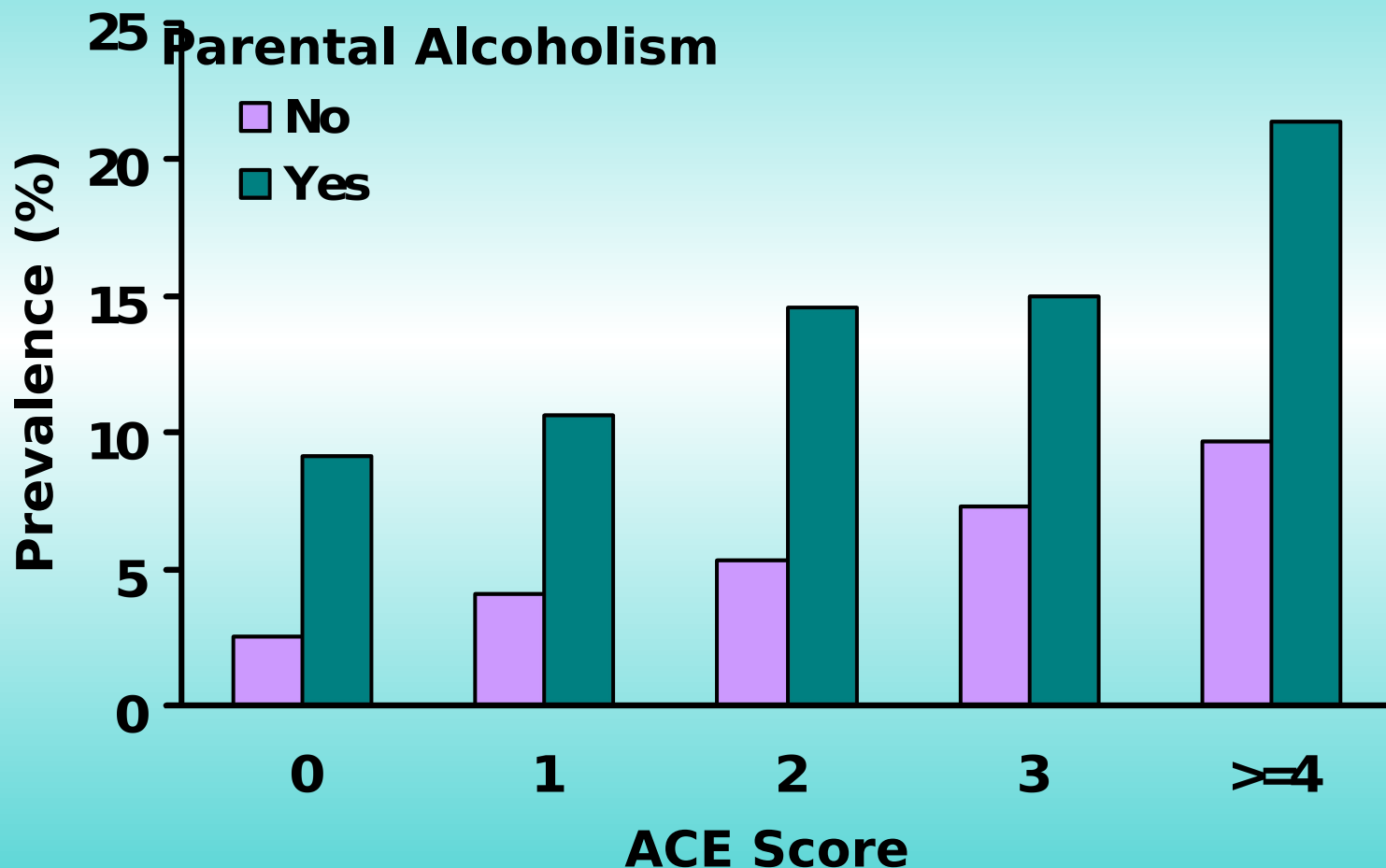
Childhood Exposure to Family Dysfunction and Prevalence of Self-Reported Alcohol Problems



Dube et al., 2002, Addictive Behaviors.



Relationship Between ACE Score and the Risk of Self-Reported Alcoholism



Dube et al., 2002, Addictive Behaviors.



Definition of Suicide Attempt

Suicide attempts were assessed with the question: “Have you ever attempted to commit suicide?”

- **Lifetime prevalence of at least one suicide attempt:**

3.8%

- **Three times higher for women than for men:**

5.4% vs 1.9%, respectively.

- **The age-adjusted prevalence of suicide attempt**

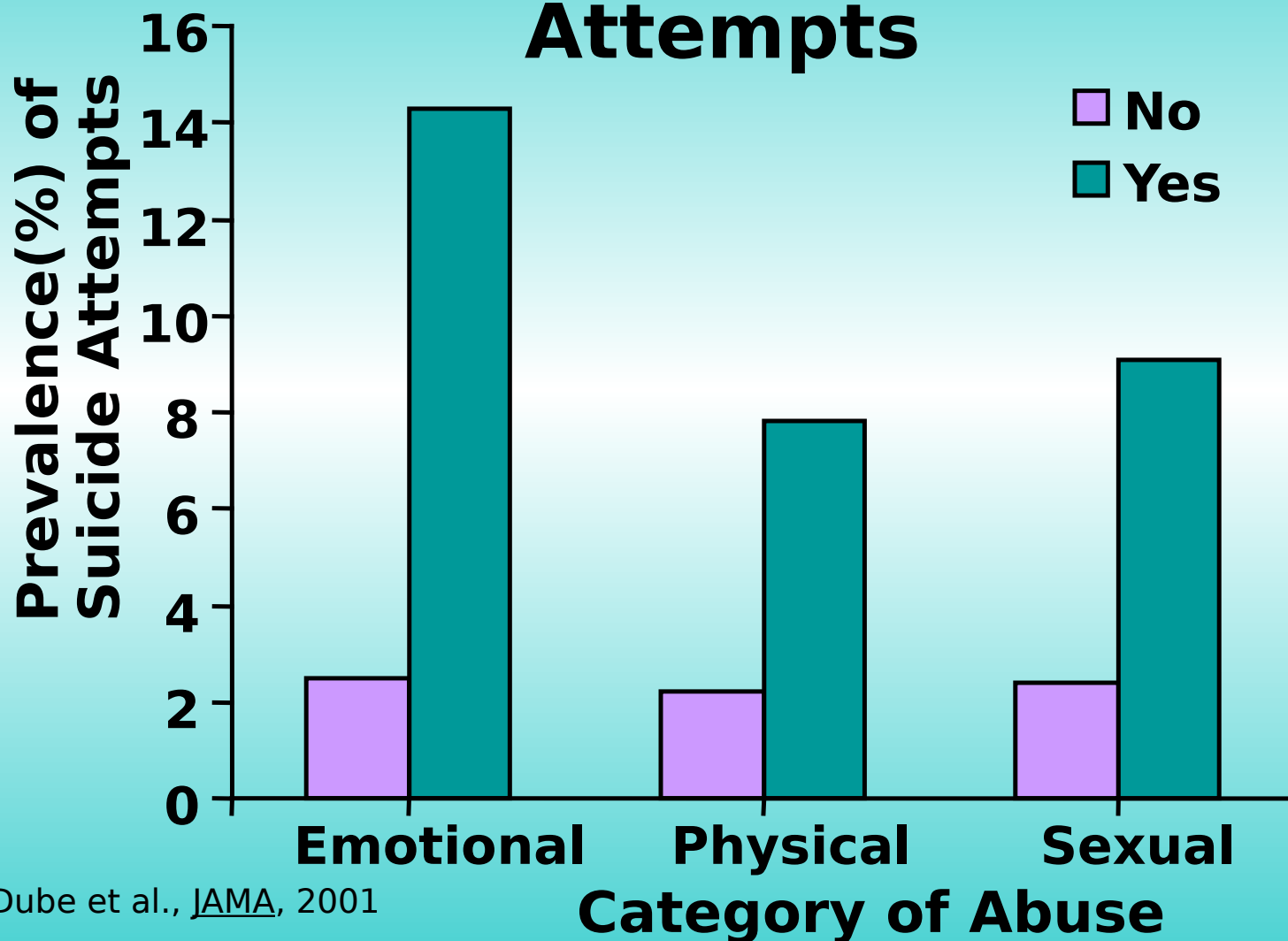
decreased with increasing education



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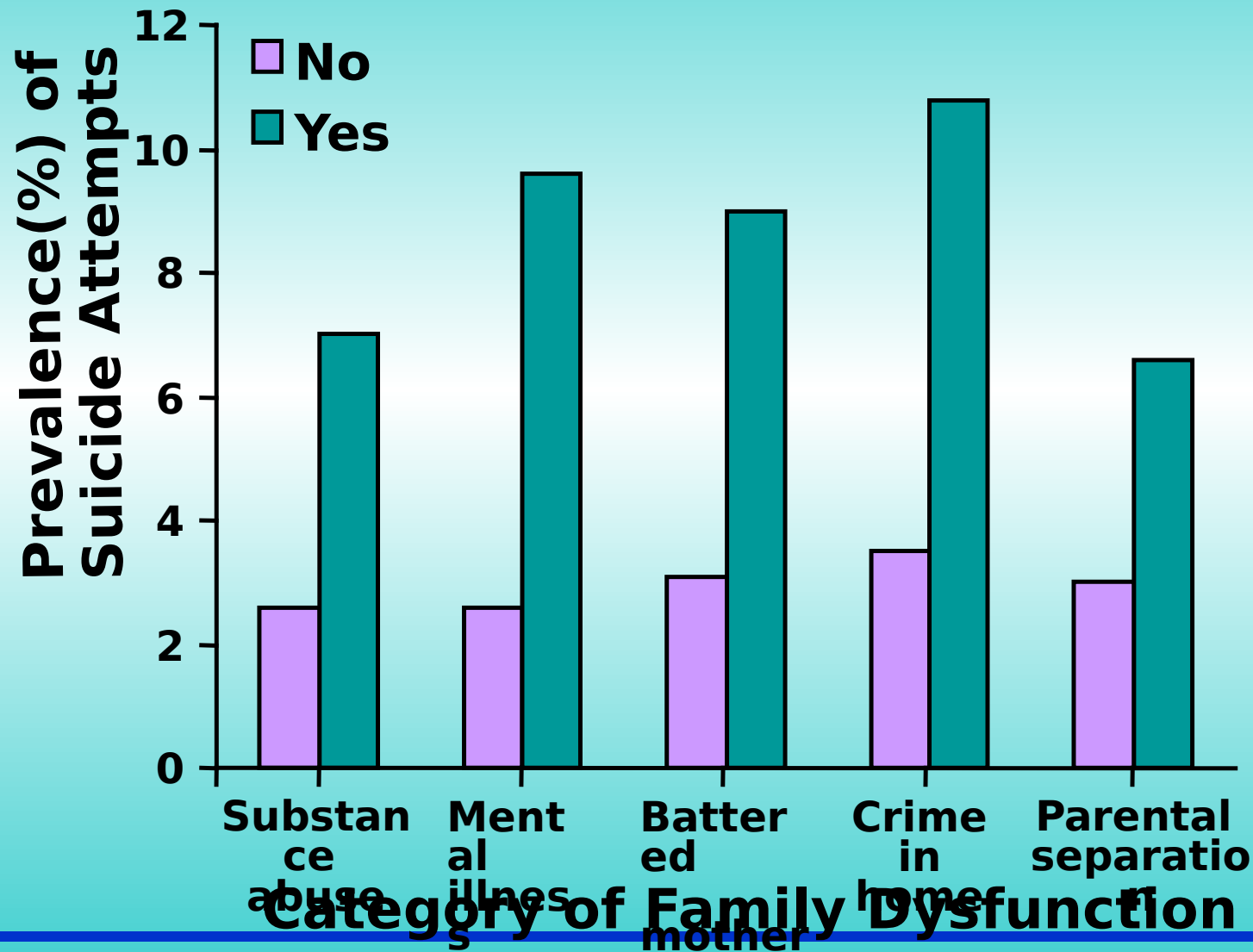


Childhood Exposure to Abuse and Prevalence of Suicide Attempts



Dube et al., JAMA, 2001

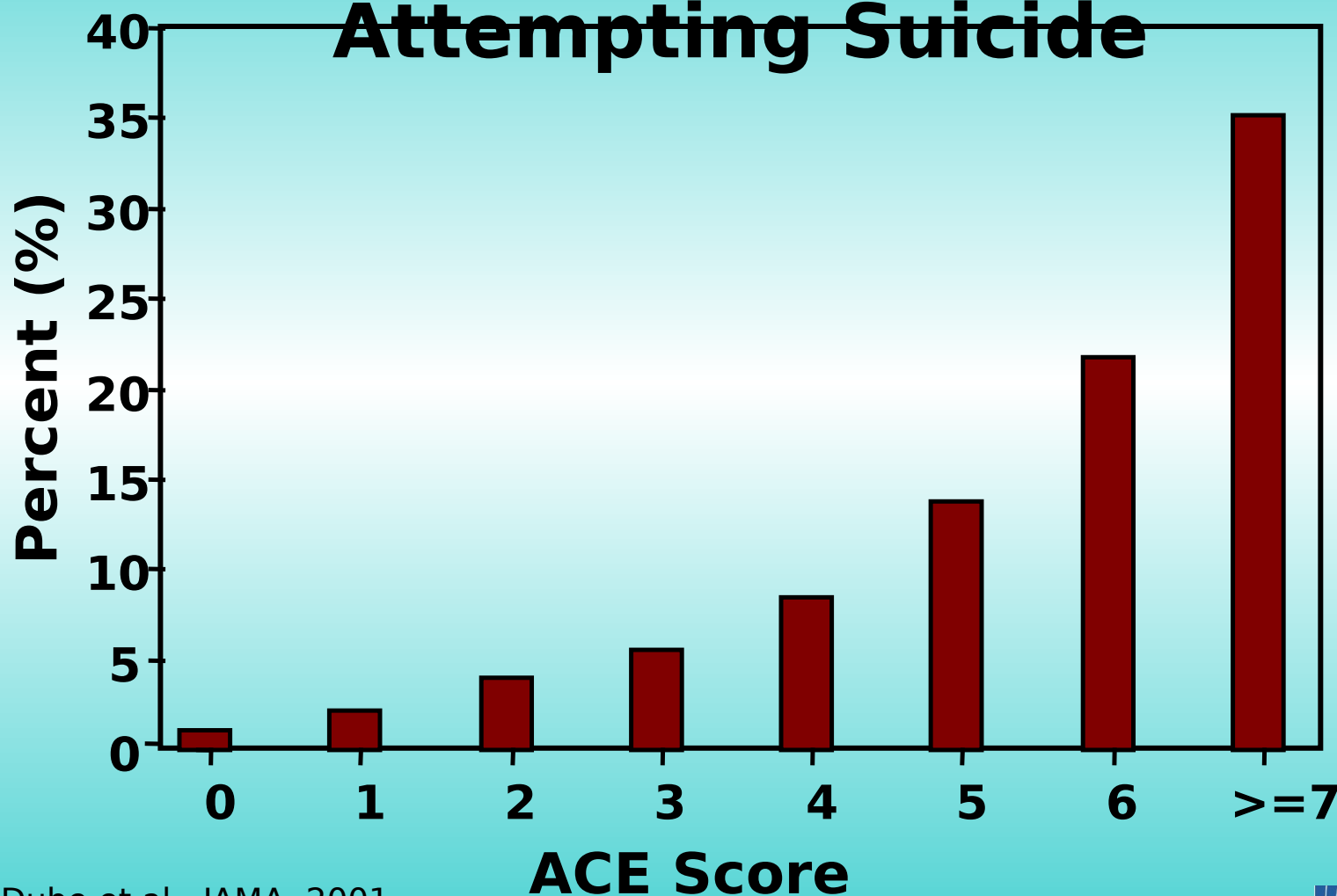
Childhood Exposure to Family Dysfunction and Prevalence of Suicide Attempts



Dube et al., JAMA, 2001

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Relationship Between the ACE Score and the Risk of Ever Attempting Suicide



Dube et al., JAMA, 2001



ACE Wave 2

Risk of Adult Intimate Partner Violence (IPV)

From the Health Appraisal Questionnaire:

- **Has your partner ever threatened, pushed, or shoved you?**
5% of women at risk for IPV victimization.
 - **Have you ever threatened, pushed, or shoved your partner?**
4.3% of men at risk for perpetrating IPV.
-



Logistic Regression of Adult Intimate Partner Violence by Type of Sexual Abuse and Age at Occurrence

(victimization)

Category	Odds ratio
95% CI	
No intercourse, >12 y	2.0
1.1-3.6	
No intercourse, ≤12 y	1.6
1.1-2.2	
Intercourse, >12 y	2.1
1.1-4.1	
Intercourse, ≤12 y	1.6
0.8-3.4	

Whitfield CL, et al., *Journal of Interpersonal Violence*, 2003.



Logistic Regression of Adult Intimate Partner Violence by Type of Sexual Abuse and Age at Occurrence

(perpetration)			
Category		Odds ratio	95%
No intercourse, >12 y		1.5	
0.7-3.3			
No intercourse, ≤12 y		1.6	
0.9-3.0			
Intercourse, >12 y		1.8	
0.9-3.5			
Intercourse, ≤12 y		3.3	
1.8-6.0			

Whitfield GL et al. Journal of Interpersonal Violence, 2003.



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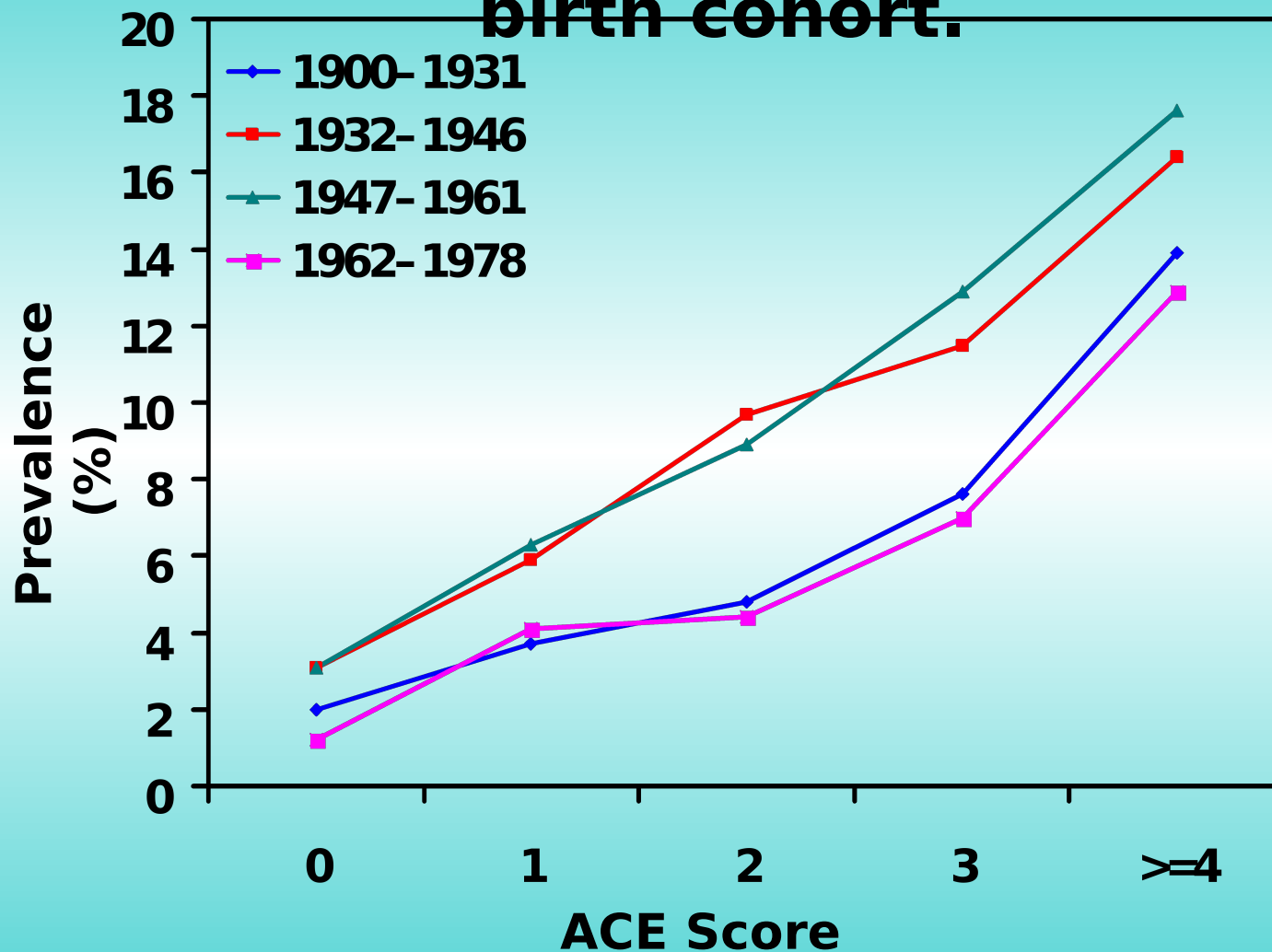
Birth Cohort Analysis of Adverse Childhood Experiences to Various Health Behaviors and Outcomes

**Despite social and secular influences to
change
behaviors:**

- **Among the ACE Study cohort, growing up with ACEs increases the risk for numerous health behaviors and outcomes for 4 consecutive birth cohorts dating back to 1900**



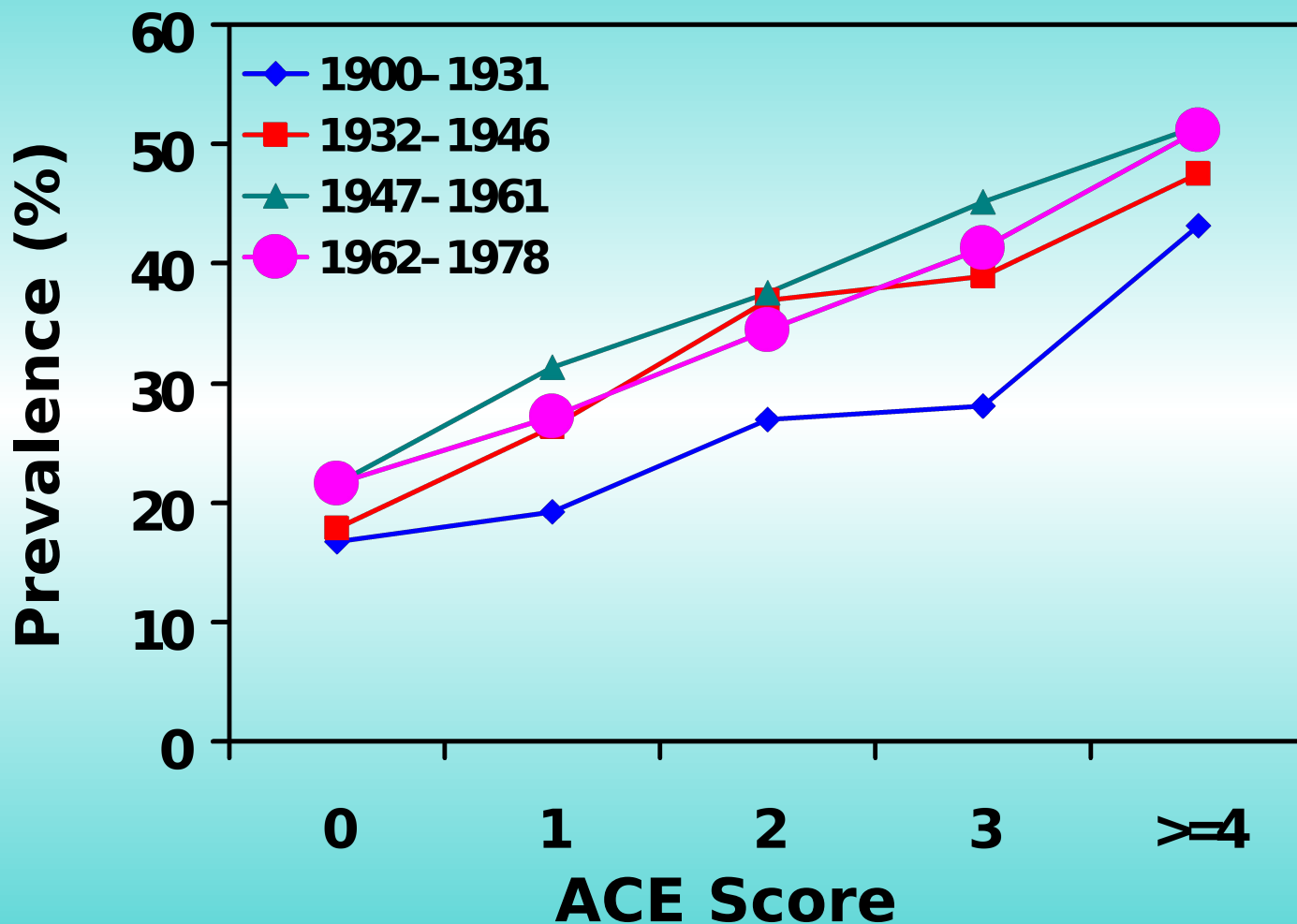
The association of the ACE score to self-reported alcoholism, by birth cohort.



Dube et al., 2003, Preventive Medicine.

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The association of the ACE score to depressed affect, by birth cohort.



Dube et al., Preventive Medicine, 2003.



Summary of Other Findings From The ACE Study

Adverse Childhood Experiences increase the risk of:

- **Current smoking**
- **Male involvement in teen pregnancy**
- **Sexually transmitted diseases**
- **Unintended pregnancy**
- **Adult depression**
- **Obesity**



Summary

- **Adverse childhood experiences are common and highly interrelated**
- **Consistent strong and graded relationships between the ACE score and health behaviors and outcomes in adolescence and adulthood**
- **Graded relationships are consistent in four birth cohorts, despite secular changes over the past century**
- **Exposure to ACEs is associated with multiple health behaviors and outcomes that are public health priorities**



Future Directions

- **Prevention of child maltreatment
(Primary Prevention)**
- **Develop screening tools for pediatric and
adolescent medicine**
 - **Identify and treat individuals affected
by ACEs
(Secondary Prevention)**



Future Directions

- **Work with DoD to determine feasibility of asking about adverse childhood experiences**
- **Develop ACE measurements for the DoD population.**

